

## CLAIMS

1. Knitted fabric wherein piezoresistive sensors for the monitoring of movement and breathing, electrodes for the monitoring of cardiac activity and breathing, and conductive connections for the transmission of signals are integrated
- 5 2. Knitted fabric according to claim 1 wherein said knitted fabric is made of multiple layers where sensors, electrodes and connections are located
3. Knitted fabric according to claim 1 - 2 wherein said piezoresistive sensors are realised by regions of fabric made of piezoresistive yarns
4. Knitted fabric according to claim 1 - 3 wherein said piezoresistive sensors are  
10 realised by the so-called "intarsia" technique
5. Knitted fabric according to claim 1 - 4 wherein said electrodes and said conductive connections are realised by conductive yarns
6. Knitted fabric according to claim 1 - 5 wherein said electrodes and said conductive connections are made using the so-called "tubular intarsia  
15 technique"
7. Knitted fabric according to claim 1 - 6 wherein said electrodes are made of metal yarns twisted with standard yarns
8. Knitted fabric according to claim 1 - 7 wherein said piezoresistive yarns are elastic yarns composed by electro-conductive fibres or synthetic fibres  
20 containing dispersed phases or shells of conductive materials
9. Knitted fabric according to claim 1 - 8 wherein said piezoresistive yarns are made with a lycra-based fabric coated with carbon loaded rubber
10. Knitted fabric according to claim 1 - 9 wherein said conductive connections are made of metal yarns twisted with standard yarns
- 25 11. Knitted fabric according to claim 1 - 10 wherein said knitted fabric is made using the double-bed jersey technique
12. Knitted fabric according to claim 1 - 11 wherein said knitted fabric is made of multiple layers in a way that electrodes are placed in contact with the skin of the user under examination while connections are insulated by a layer of fabric  
30 which separates them from the user's body
13. Use of the knitted fabric according to claim 1 - 12 for the detection of signals related to ECG, EOG, EMG, respiratory activity and respiratory frequency

14. Use of the knitted fabric according to claim 1 – 12 for the detection of signals related to movement activity
15. Use of the knitted fabric according to claim 1 – 12 for the detection of impedance pneumography
- 5 16. Process for the production of a knitted fabric according to claim 1 – 12 wherein said knitted fabric is made using the double-bed jersey technique
17. Process according to claim 16 wherein said electrodes and said conductive connections are made using the so-called "tubular intarsia technique"
18. Process according to claim 17 wherein said knitted fabric is made with double  
10 bed weft knitting machines